

## 4.16b

### Inverse functions and “U” substitution with logarithms

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

Find the inverse of each function. Leave all answers with positive or rational exponents if possible.

1.  $f(x) = \log(x - 4) + 2$

2.  $f(x) = \log_5(x - 7) - 4$

3.  $f(x) = \log_3(3x - 2) + 4$

4.  $f(x) = \log_{10} x + 2$

5.  $f(x) = \log_4(2 - x) - 3$

6.  $f(x) = \ln(x + 1)$

7.  $f(x) = 3 + \ln x$

8.  $f(x) = -\ln(-x)$

9.  $f(x) = -2\ln(x - 3)$

10.  $f(x) = \ln(2x) - 1$

11.  $f(x) = 2\ln(5 - x) + 3$

12.  $f(x) = e^x - 3$

$$13. f(x) = 2^{(x+2)} + 1$$

$$14. f(x) = 5^{(x-4)} + 1$$

$$15. f(x) = \frac{1}{3}e^{(2-x)} + 4$$

$$16. f(x) = -2 \cdot 3^{(1-2x)} + 5$$

**Solve each equation using substitution. Show all work. Round to the nearest ten thousandths.**

$$17. e^{2x} - e^x - 6 = 0$$

$$18. e^{4x} - 3e^{2x} - 10 = 0$$

19.  $e^{2x} - 7e^x + 6 = 0$

20.  $e^{2x} - 6e^x + 8 = 0$

21.  $3^{2x} + 3^x - 20 = 0$

22.  $5^{2x} + 3 \cdot 5^x - 10 = 0$

23.  $2^{2x} + 4 \cdot 2^x - 12 = 0$

24.  $4^{2x} - 4^x - 30 = 0$

25.  $6^{2x} - 6 \cdot 6^x + 9 = 0$

26.  $2 \cdot 7^{2x} + 11 \cdot 7^x + 5 = 0$